

ABSTRACT

A method for dry-etching a Si substrate or a Si layer in a processing chamber includes the step of supplying an etching gas into the processing chamber, wherein the etching gas is a mixture gas including Cl_2 , O_2 and NF_3 , and a residence time τ of the etching gas is equal to or greater than about 180 msec, the residence time τ being defined as:

$$\tau = pV/Q$$

where p represents an inner pressure of the processing chamber; V , an effective volume of etching space formed on the Si substrate or the Si layer; and Q , a flow rate of the etching gas.